

## CHECKING UP ALIGNMENT LENGTHENS LIFE OF CAR

The Fifty-sixth of a Series of Articles by an Expert for the Automobile Owner.

### By WALTER SHIELDS.

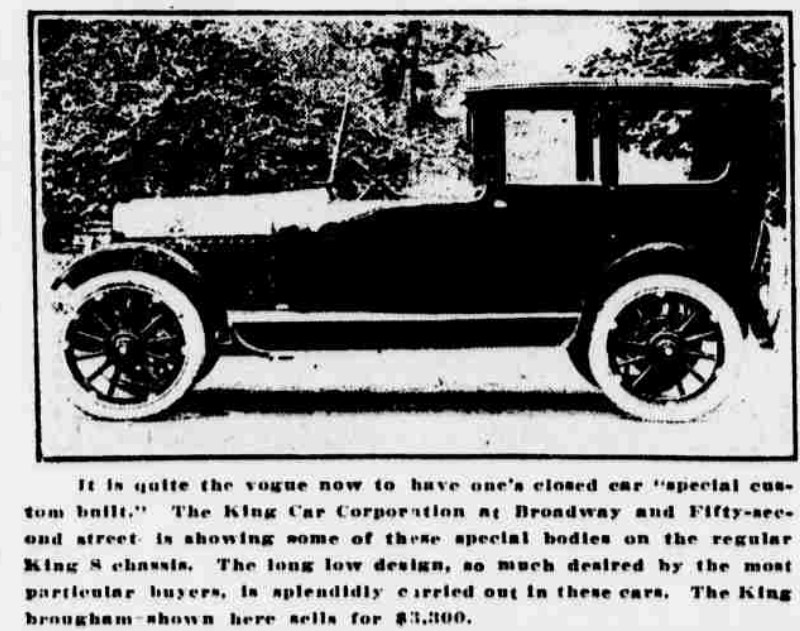
If two conditions, namely perfect lubrication and perfect alignment, could be maintained in every part of an automobile it never would wear out. The parts running true and never touching, there would be no wear as we ordinarily understand it. With the alignment perfect and the lubrication also we would have the ideal piece of mechanism. However, neither condition can be maintained all the time, and it is even the most difficult of tasks to manufacture a car as to get alignment closely approaching the ideal. When a part is not running true, that is out of alignment, it means that it is not running parallel or in correct relation to the adjacent parts. Thus, if two bevel gears are correctly in mesh their axes are at 90 degrees to one another, but if the axes are not at 90 degrees there is out of alignment. Take an ordinary paper pin wheel running at 90 degrees to its axis and tilt the wheel, you cause excessive friction and reduce its speed, because the wheel does not run in its true relation to its shaft. Now, when a car leaves the factory the parts are aligned as best is possible and well enough for the purpose, but the driver of the car can soon destroy this alignment in many parts by improper handling of the car, and by not attending to its lubrication it makes matters still worse.

Just to illustrate the point I wish to make let me mention an incident that occurred recently in the largest service station in New York. An owner brought his car in, complaining of noise in the vicinity of the generator, though there were no charging and lighting troubles generally. The electrical man was put on the job and after testing the generator removed it for testing in the shop. The generator was dismantled and it was found that the armature was burned out, all because the owner had neglected to oil the rear armature bearing. The owner admitted he did not oil it. This bearing went dry, wore excessively and permitted the armature to drop down and scrape against the field pieces. The cost for fixing up the generator was mentioned as \$15—all because the owner neglected to oil five minutes time and a few drops of oil.

Out of alignment is first brought home to the owner when he comes to make a tire adjustment and the adjuster in emphatic terms tells him that the tire is all right but the wheel is not running true. There is no denying it, for the tire tread convincingly shows this. When wheels are out of alignment it is the easiest of things to see that instead of truly rolling around they will half roll and half slide and perhaps wobble non-stop. The tire wears on one side and the tire part ahead and part side ways, which means that that tire scrapes across the ground and the tread gets the same sort of treatment that it would if held against an emery wheel, only the grinding is not so rapid. Now the front tire alignment is affected by a number of things, including the steering, the front axle, the wheel itself and its bearing and rim. Rear tire alignment is affected by the wheel and bearing rim and the axle. The cost of checking up wheel alignment three times a year is trifling compared with the tire wear, yet how many owners attend to this matter as they should.

Out of alignment is terribly impressed on the owner in many other ways. I do not know how many readers have had rear axle trouble, but it can be said with a fair degree of certainty that most of it was caused by out of alignment caused by lack of lubrication or poor driving. It is easier to harm the rear axle than most drivers imagine. Take an instance of the breakage of a differential ring gear caused by starting up with the hand brake applied. The weakest part breaks or takes the stress and disintegrates accordingly. Driving over a piece of rough road recently an owner had occasion to stop suddenly. But at the moment he applied the brakes, which he did hastily, locking the rear wheels, the rear end was up in the air. When the wheels came to the ground again they were not moving at any speed, but the car was going forward fairly fast, too fast for the road. What happened? The weakest part of the drive system took the tremendous strain, and it happened to be the driving pinion. The rear end of driving throws many parts out of alignment, but the owner does not know it at the moment. Later on rear growling may tell him that something is wrong. He says the gears need oil. Perhaps they do, but often the bearings need replacement or the housing needs realigning or an axle shaft needs straightening.

### King Eight Brougham "Custom Built."



It is quite the vogue now to have one's closed car "special custom built." The King Car Corporation at Broadway and Fifty-second street is showing some of these special bodies on the regular King 8 chassis. The long low design, so much desired by the most particular buyers, is splendidly carried out in these cars. The King Brougham shown here sells for \$3,300.

## CLOSING OUT SALE OF SEDAN BODIES

Four Door Type for following Cars:  
PIERCE ARROW PACKARD  
LOCOMOBILE CADILLAC  
OWEN MAGNETIC MARMON  
STEARNS KNIGHT

AT LESS THAN COST

Painted and upholstered to suit. Delivered in a very short period. We need the room for our new Repair Department.

**ROYAL MOTOR BODY CO.,**  
211 WEST 19th STREET NEW YORK

## HIGH CLASS AUTO Repair Work

For the war-time economist who will rebuild his present car instead of buying a new one, we have established a new department where the "Royal" standard of quality will prevail.

**BODY WORK PAINTING UPHOLSTERING SLIP COVERS VICTORIA TOPS**

AT LOW COST

## Short Cuts to Repairs

### An Apparatus for Filling Storage Batteries.

The bottle (A), which may be obtained at any drug store, should be fitted with a cork (D) through which pass two glass tubes (B and C). Fill the bottle with distilled water, then insert the cork holding the tubes and attach tube (C) to bottle.

By holding the thumb over the end of tube (B), the water will not flow. By releasing the thumb, the water will flow as required. This device is illustrated in Figure 1.

Robert B. Ord, Santa Barbara, Cal.

### An Easily Made Carburetor Warmer.

Figure 2 illustrates a device which is easily made and which will keep the gas in carburetor bowl warm, making starting very easy in cold weather.

A two candle power light bulb may be connected to the lighting circuit with the switch on the instrument board. This bulb is placed in the bowl of the carburetor as shown in illustration. When the car is standing, during the cold weather, the switch should be turned on, thus connecting the light and keeping carburetor bowl warm.

Wm. Bronson, Western avenue and Walnut street, Blue Island, Ill.

### A Home Made Theft Alarm.

The plan illustrated in Figure 3 has been used to good advantage as a theft alarm.

A large bell is mounted under the car where it is invisible, but where it can be easily heard. This bell is operated by the battery on car and is connected to a push button placed under the cushion of the driver's seat. A switch is connected on the line, and mounted in an inconspicuous place.

When the driver leaves the car he turns on the switch. Then if any one who is not familiar with the device sits on the driver's seat, the bell rings instantly, calling attention to the fact that someone is tampering with the car.

W. S. Richard, Sixteenth street, below Diamond, Philadelphia, Pa.

### MAMMEN HEADS TRUCK CO.

Into the production of a low priced 4,000 pound capacity truck. Specifications are remarkably good for a truck of this size and include such features as large tires, unusual power, internal gear drive, etc.

The company is headed by H. P. Mammen, who was formerly associated with and largely responsible for the success of the Westcott Motor Company of Springfield, Ohio.

The price of the truck is placed at \$1,995, and off of this the company reports that numerous distributors' contracts have already been made. Considerable material for the manufacture of the trucks will be produced in the St. Louis industrial section, but other parts will be shipped in from outside points.

### Giving the Women a Chance.

Harry De Bear, the local Maxwell manager, not only believes in votes for women but in trucks for women. When some young women recently asked him for the use of a Maxwell truck to assist in a mechanical course they had inaugurated, he promptly furnished one, and, as the photograph shows, the women "hopped to it" with a vengeance and the truck didn't seem to mind it at all.

There are more automobiles sold in New York and New Jersey than in any other metropolitan area in the country, due to a certain measure to the excellent truck roads that connect the different States and cities. The States of New York and New Jersey have realized their good roads and realize millions of dollars annually from the proceeds, says Vice President W. A. Woods of the Vanderbilt Vehicle Corporation, metropolitan distributors for the Pierce-Arrow cylinder cars and trucks.

Good roads are an asset and bring actual advantages to the people. With an automobile the distance of fifty miles is no more than that of one mile to the person who drives it. Besides it provides fresh air, the open country, and health. Automobiles are now within reach of every one and may be operated with economy and profit.

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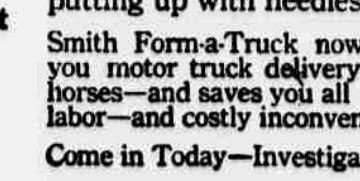
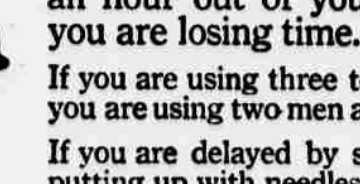
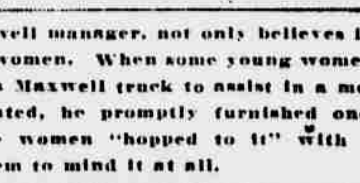
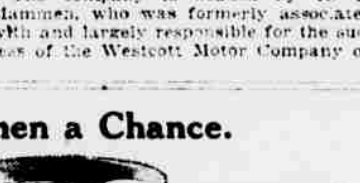
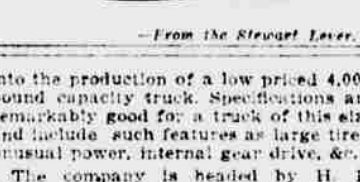
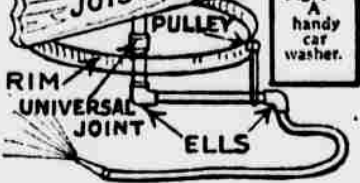
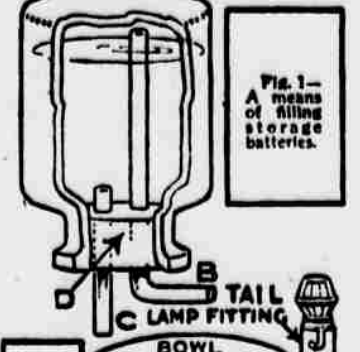
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### To Remove Brake Pins.

Difficulty is sometimes encountered in removing brake pins which have become rusted.

A C clamp, as shown in Figure 4, may be used in this work to good advantage. Place the hollow end of the C clamp over the head of the brake pin against the head of the yoke and screw firmly.

Then tighten the cap screw against the other end of the pin, forcing the pin into the hollow end of the C clamp.

C. A. Ritter, Romig Auto Garage, Akron, Ohio.

### To Keep a Split Gear From Slipping.

Figure 5 illustrates a means which prevents a split gear from slipping when clamped to a shaft.

Double a piece of sand paper and wrap around the shaft in the form of a shim to come between the shaft and the gear. The rough surface against both the shaft and gear prevents the gear from slipping.

Chas. A. Lent, 50 East Genesee street, Syracuse, N. Y.

### To Tow a Ford Car With Broken Axle.

Tie a 2 by 4 twelve feet long on the outer edge of the running board, with end projecting two or three feet behind rear wheel. Drill a hole in a piece of 2 by 4 board so that the hole will pass through it. Nail this board to the 2 by 4 at the point where it crosses the hub cap. Then tie the end of the 2 by 4 firmly across to the opposite side of the car frame.

This arrangement, shown in Figure 6, allows car to be towed at a good speed for several miles.

Percy E. Thorpe, Bentley Garage, Alburta, Canada.

### A Convenient Car Washer.

A discarded wheel rim is fastened to the joint by means of two hanger bolts. A universal joint is placed on the pipe and the horizontal pipe is operated on the rim by means of the hanger attached to the pulley.

The hose is then attached to the pipe and by means of the pulley which runs around the rim the pipe can be turned in any direction. The car may be washed without moving.

Harold P. Austin, Cottonwood Falls, Kansas.

### HEARING ON GASOLINE.

#### Fire Commissioner Gives Notice of Meeting This Week.

Fire Commissioner Thomas J. Brennan sends the following:

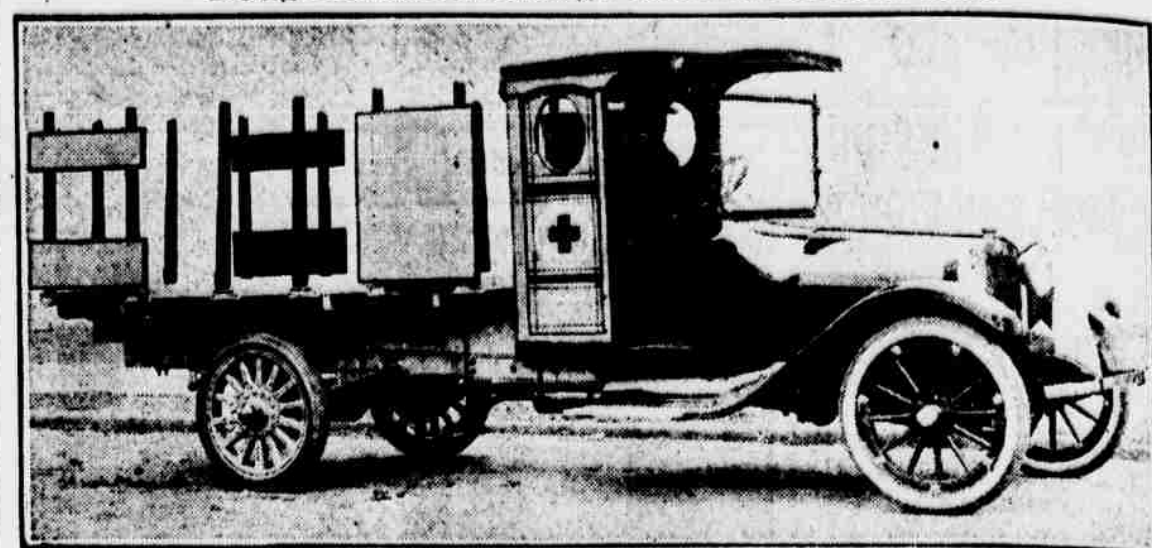
Notice is given that a public hearing will be held in Room 1124, Municipal Building, February 27, at 2:30 P. M., on the subject of the transportation and delivery of gasoline within the city limits. The following items will be considered and all interested may be heard:

1. Should the present ordinance be amended so as to allow a more extensive delivery by tank wagons and would the fire hazard thereby be materially increased?

2. What restrictions should be placed on the delivery of gasoline by tank wagons covering (a) construction of wagons; (b) means of propulsion, i. e., whether horse drawn or gasoline or electric driven; (c) routes to be prescribed; (d) whether delivery of gasoline in tank wagons should be prohibited in certain streets and districts.

This hearing will be before the Board of Hazardous Trades.

### Dodge Brothers Strong Factors in Truck Field.



Colt-Stratton Company, Dodge Brothers New York dealers, are meeting with success in the sale of the new Dodge Brothers' half ton commercial car and the 1-2 ton truck shown above. This truck, which combines a Torbensen internal drive rear axle, with Dodge Brothers' power plant, retails in New York for \$1,400, with stake or express body.

## LOCATE TROUBLE BY REASONING

If the Engine "Acts Up" Give It Systematic "Once Over."

"The reason many owners of automobiles fail to locate troubles when they occur is because they take only a limited view of the problem," says William H. Stewart, Jr., president of the Stewart Automobile School.

"Their inspection only extends to the carburetor or the ignition, and having looked over the few parts they do understand they are at a loss what to do next. And yet there are only four requirements for an engine to start and one more to enable it to keep going unless it is overloaded.

"The four conditions necessary for the engine to start are ignition, carburetion, lubrication and compression. If these are right the engine must start. Nothing can prevent it. The remaining requirement is cooling, which must be right if the engine is to run any length of time. Therefore if one is trying to get his engine started or to develop best power all five conditions must be looked after.

"If an engine refuses to start we are concerned with the first four. We crank the engine by means of the starter. If it refuses to spin the lubrication may be defective or the battery weak. We turn on the lights. If they burn brightly and do not dim excessively when the starter is used the battery is not weak. So we suspect the lubrication. The best test is to get out the starting handle and to crank the engine by hand. This also gives one a chance to test the compression at the same time. If there is a good resistance as each cylinder comes on compression we can diagnose that point. If one or more show weakness we must locate the leak, which may be around the valve caps, spark plugs, reed valves, leaky gasket, where cylinder head is removable, intake or exhaust valve, scored cylinder or trouble with the piston rings.

"Having corrected all the ignition troubles start the engine and inspect the cooling system. Fill the radiator, see that fan is working and remove filter cap to see if the water is in motion. If it is not the pump may not be working unless there is a thermostat. Another test is to run engine several minutes and note if bottom of radiator becomes hot or not. If it does the pump is working. If not the pump may not be working or the hose connecting them may be clogged.

2,000,000 See Motor Film.

It is estimated that during the year 1917 over two million people saw the new motor film. This film is now being shown in the theaters of the country.

Chandler Sedan.

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## FARMERS ENTHUSE OVER AUTO'S UTILITY

Tell Haynes Man How Indispensable They Are in Country Use.

The American farmer considers the passenger automobile as an indispensable part of his farm equipment. When the automobile the farmer would be handicapped to an extent which would seriously affect the highly important food supply.

These facts were set forth conclusively by farmers in their replies to the questionnaires sent out by the Haynes Automobile Company recently. The letters were sent to 1,000 owners picked at random from every State. The fact that approximately one-seventh of the replies were from farmers indicates the extent to which high grade cars are used by agriculturists.

A Wisconsin farmer states that it would be impossible to get along without his car.

"I am operating two farms, twenty-five miles apart. This would be impossible without the Haynes," writes an Idaho farmer.

A South Dakota farmer says: "I own several farms and do not see how I could handle them without a car." The war has made great inroads on farm labor, calling for the utilization of every available mechanical device. A Kansas farmer who uses his car to combat this shortage says, "I would be unable to run a farm now, as scarce as farm labor is, without a car."

These replies are representative of the many received by the Haynes company from farmers. The replies have proved beyond